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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,338	09/09/2005	David L Light	07810.0118.00000	6749
22852 7590 03/12/2007 FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			EXAMINER PARVINI, PEGAH	
			ART UNIT 1755	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE.	
3 MONTHS		03/12/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/518,338	<b>Applicant(s)</b> LIGHT ET AL.	
	<b>Examiner</b> Pegah Parvini	<b>Art Unit</b> 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>20041217, 20050909</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-4, 6-7, 10-11, 13-16, 18, and 20-25 are rejected under 35 U.S.C.

103(a) as being unpatentable over WO 00/66510 to Lyons et al. in view of WO 00/59840 to Golley et al.

3. Regarding claims 1 and 13, Lyons et al. disclose a pigment composition for coating formulation for coating paper products which yields higher brightness as well as good gloss compared to the previous art; the pigment composition comprises kaolin having the steepness of greater than 38, preferably greater than about 40, desirably greater than about 45 (page 8, lines 7-11). Also, at least 90% of the kaolin used has the particle size less than 2 $\mu$ m, and not greater than 25% has the particle size of less than 0.25 $\mu$ m (page 14, lines 5-10). In addition, as disclosed, the kaolin used is obtained from a secondary kaolin deposit (page 17, line 14-17). Furthermore, the shape factor of the kaolin used may be, for example, less than 25, or less than 20 (page 18, lines 11-12).

Lyons et al. is silent as to the use of equivalent spherical diameter or "esd" as a measure of particle size.

Golley et al. disclose a coating composition for preparing gloss coated paper, especially lightweight and ultra-lightweight coated paper in which the particle size distribution or "psd" is such that at least 80%, preferably 85% to 95%, and most preferably 88% to 92% by weight of the particles have an equivalent spherical diameter or "esd" smaller than  $2\mu\text{m}$ , and less than 35% by weight of the particles have an esd smaller than  $0.25\mu\text{m}$  (page 1, lines 2-7; page 12, lines 23-28). In addition, the crude kaolin used in the disclosed invention is from a sedimentary kaolin bed (page 7, lines 18-19).

Lyons et al. and Golley et al. are analogous art because they are from the same field of endeavor of producing a kaolin pigment used in paper coating in which the crude kaolin clay is of the secondary kaolin deposits.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Lyons et al. to include the particle size measurements based on "esd" considering the fact that Golley et al. teach a very similar kaolin pigment product used in the same field and that the pigment product has been shown to give great improvement in sheet brightness, opacity, print gloss, and gloss as compared to standard products (page 22, lines 10-14).

With reference to claim 13, through the process, as disclosed by Golley et al., the shape factor is increased from about 15 to 25-50 (page 13, lines 26-27). Also, it is noted that this is a product-by-process claim.

See MPEP § 2113:

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The

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patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."

Therefore, it would have been obvious to combine Golley et al. with Lyons et al. to obtain the invention as specified in claims 1 and 13.

4. Regarding claims 3 and 4, Lyons et al. disclose that at least 90% of the kaolin particles in the disclosed pigment have the particle size of less than 2 $\mu$ m (page 14, lines 6-8).

5. Regarding claims 6 and 7, Lyons et al. disclose shape factor of less than 25 (page 18, lines 11-12). It is noted that the claimed shape factor in the claims 6 and 7 of the instant application are from 20-36, and 23-33; considering the ranges disclosed for the shape factor, there is an overlap between the claimed range and the disclosed ones.

6. Regarding claims 10 and 11, Lyons et al. disclose a steepness of greater than 38 for the kaolin employed in the pigment composition (page 8, lines 6-9).

7. Regarding claims 3-4, Golley et al. disclose that at least 80% by weight, preferably 85% to 95% by weight, and most preferably 88% to 92% by weight have an esd smaller than 2 $\mu$ m (page 12, lines 12-14).

8. Regarding claims 14 and 18, Golley et al. teach the process step of producing the disclosed kaolin pigment as described in detail above for claim 1, in which, first, the raw kaolin clay crude with naturally platy clay from a sedimentary deposit is mixed with water, second, the slurry is diluted and subjected to attrition grinding using a grinding medium, third, the particulate kaolin is separated from grinding medium, then, the result is subjected to particle size classification, and finally to dewatering the suspension of ground kaolin clay (page 7, lines 26-31; page 8, lines 1-20; page 13, lines 28-31; page 14). Furthermore, the prior art disclose that a second embodiment of the invention provides for a blend of naturally platy kaolin crude with "blocky" kaolin clay, which is too coarse; then, the blend is subjected to the steps described above (page 9, lines 23-31; page 10, lines 1-5). As an example, Golley et al. disclose that a blend may comprise of crude platy clay and coarse clay (page 17, lines 18-24). In addition, through the process, as disclosed by Golley et al., the shape factor is increased from about 15 to 25-50 (page 13, lines 26-27).

9. Regarding claims 15 and 16, Golley et al. teach the process step of producing the coarse kaolin, in which, first, the raw kaolin clay crude with naturally platy clay from a sedimentary deposit is mixed with water, second, the slurry is diluted and subjected to attrition grinding using a grinding medium, third, the particulate kaolin is separated from grinding medium, then, the result is subjected to particle size classification (page 7, lines 26-31; page 8, lines 1-20). It is noted that as disclosed by Golley et al. the "blocky"

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or coarse kaolin is the kaolin clay component which generally is the discarded fraction in a centrifuge or classification operation which is described above (page 9, lines 29-31; page 10, lines 1-2). Therefore, the method of preparing the coarse kaolin clay is, in fact, described within the process of making the pigment.

10. Regarding claim 20, Golley et al. disclose a coating composition for use in producing gloss coatings on paper and other substrates which composition comprises an aqueous suspension of a particulate pigment together with a hydrophilic adhesive or binder, wherein the particulate pigment comprises the disclosed pigment product with the properties indicated above in detail (page 18, lines 5-12).

11. Regarding claim 21, Golley et al. disclose that the clay content of the paper coating may be greater than 60% by weight, preferably at least 70% of total dry solids (page 18, lines 15-18).

12. Regarding claim 22, Golley et al. disclose, as described in detail above for claim 1, a coating composition, which comprises an aqueous suspension of a particulate pigment and adhesive wherein the total dry weight of the pigment is at least 80%. It is noted that claim 22 claims an amount of at least about 80% (page 19, lines 10-11).

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13. Regarding claim 23, Golley et al. teach that the binder composition may comprise an adhesive derived from natural starch; it, further, disclose that the starch may be unmodified or raw starch (page 19, lines 15-18, 26-28).

14. Regarding claim 24, Golley et al. disclose that the starch binder may be used in conjunction with one or more other binders (page 20, lines 15-17).

15. Regarding claim 25, Golley et al. teach a method of applying the coating composition to coat sheet of paper and calendering the paper to form a gloss coating thereon (page 20, lines 26-30).

16. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyons et al. in view of Golley et al. as applied to claim 1, and further in view of US Patent No. 5,169,443 to Willis et al.

17. Regarding claim 2, Lyons et al. disclose a pigment composition for coating formulation for coating paper products with the properties as described in detail above. Golley et al. disclose a coating composition for preparing gloss coated paper, especially lightweight and ultra-lightweight coated paper with the properties as described in detail above.



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Lyons et al. and Golley et al. do not disclose that the secondary or sedimentary crude kaolin clay is obtained from Para State region of Brazil.

Willis et al. disclose that Rio Capim kaolin of Para, Brazil, are contained within an extensive sedimentary formation containing coarse and fine sands, clays and silts (column 2, lines 60-64; column 5, lines 6-8).

Lyons et al., Golley et al., and Willis et al. are analogous art because they are from the same field of endeavor of paper coating pigments and kaolin particles used in paper products.

At the time of the invention, it would have been obvious to modify Lyons et al. and Golley et al. to include that the kaolin clay used in the pigment production is obtained from Para region of Brazil since the kaolin obtained from Rio Capim of Para State of Brazil are capable of providing delaminated kaolin pigments having both desirable low viscosity not normally associated with delaminated pigments, desirable optical properties of opacification normally associated with coarse particle size delaminated kaolin pigments and desirable optical properties of gloss not normally associated with delaminated pigments (column 2, lines 60-68; column 2, line 1).

Therefore, it would have been obvious to combine Willis et al. with Lyons et al. and with Golley et al. to obtain the invention as claimed in claim 2.

18. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyons et al. in view of Golley et al. as applied to claim 1 above, and further in view of WO 00/32699 to Yuan et al.

19. Regarding claim 5, Lyons et al. disclose a pigment composition for coating formulation for coating paper products with the properties as described in detail above. Golley et al. disclose a coating composition for preparing gloss coated paper, especially lightweight and ultra-lightweight coated paper with the properties as described in detail above.

Lyons et al. and Golley et al. do not disclose that from about 14% to about 18% by weight of the particles have an esd less than about 0.25 $\mu$ m.

Yuan et al. disclose a kaolin pigment to provide a coating composition for lightweight printed paper and a method thereof (page 9, lines 6-7, 12-13) in which the kaolin particles used have a shape factor of greater than 12 in which at least 91% by weight of the particles have an esd less than 2 $\mu$ m and not more than 30% by weight of the particles having an esd less than 0.25 $\mu$ m (page 8, lines 6-13). Furthermore, Yuan et al. disclose that about 17.8% by weight of the particles have an esd less than 0.25 $\mu$ m (page 19, Table 2).

Lyons et al., Golley et al., and Yuan et al. are all analogous art because they are from the same field of endeavor of producing kaolin pigment for coating paper products.

At the time of the invention, it would have been obvious to modify Lyons et al. in view of Golley et al. to include the esd size of less than 0.25 $\mu$ m for about 17.8% by

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weight of the particles as that taught by Yuan et al. in order to obtain a kaolin clay pigment in which about 93% by weight of it has an esd of less than  $2\mu\text{m}$  and about 17.8% by weight of it has an esd less than  $0.25\mu\text{m}$  with the shape factor of about 18.4 which show overlaps with the ranges claimed in claim 5, and 1. Further motivation would have been that the disclosed kaolin pigment product has shown to yield superior sheet brightness, sheet gloss, sheet opacity and print gloss when compared to commercially available kaolin clay product or blend (page 8, lines 21-23).

Therefor, it would have been obvious to combine Lyons et al., with Golley et al., and with Yuan et al. to obtain the invention as claimed in claim 5.

20. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyons et al. in view of Golley et al. as applied to claims 1, and 7-8 above, and further in view of US Patent Application Publication No. 2004/0250973 A1 to Johns et al.

21. Regarding claims 8-12, Lyons et al. disclose a pigment composition for coating formulation for coating paper products with the properties as described in detail above. Golley et al. disclose a coating composition for preparing gloss coated paper, especially lightweight and ultra-lightweight coated pager with the properties as described in detail above.

Lyons et al. and Golley et al. are silent as to the specific properties claimed in, specifically, claims 8-9, and 12 regarding shape factors of between 26-30 and 28-30 and steepness of about 36 to 38.

Johns et al. disclose kaolin products and their production, in particular, kaolin fillers used in making super-calendered (SC) papers and their production (paragraph [0001]). Johns et al, further, disclose that the steepness of the kaolin product is at least 32 (paragraph [0029]). In addition, Johns et al. teach that the kaolin particles in the product have a shape factor of at least 30 (paragraph [0031]).

At the time of the invention, it would have been obvious to modify Lyons et al. and Golley et al. to include the properties as disclosed by Johns et al. motivated by the fact that, as disclosed in Johns et al., the kaolin products having the combination of the defined values of steepness factor and shape factor give beneficially enhanced combination of high brightness and high porosity and thereby enhances printability (paragraph [0032]).

Therefore, it would have been obvious to combine Willis et al. with Lyons et al. and with Golley et al. to obtain the invention as claimed in claims 8-12.

22. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyons et al. in view of Golley et al. as applied to claims 1, 14, and 16, and further in view of US Patent No. 6,003,795 to Bown et al.

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23. Regarding claim 17, Lyons et al. disclose a pigment composition for coating formulation for coating paper products with the properties as described in detail above. Golley et al. disclose a coating composition for preparing gloss coated paper, especially lightweight and ultra-lightweight coated paper with the properties as described in detail above.

Lyons et al. and Golley et al. do not disclose attrition grinding done in more than one stage.

Bown et al. disclose grinding of particulate material specially those used in paper coating pigments, which should have fine particle sizes (column 1, lines 19-23; column 2, lines 55-56).

Lyons et al., Golley et al., and Husband et al. are analogous art because they are from the same field of endeavor of paper coating compositions.

At the time of the invention, it would have been obvious to modify Lyons et al. in view of Golley et al. to include the multi-stage grinding as that taught by Bown et al. for a suspension to obtain fine particulate material to be used in paper coating pigment. The motivation would have been that, as disclosed, each grinding stage may comprise a medium attrition grinding; in addition, by the last stage of grinding in a three or four stage grinding, the particle size distribution has come to be such that not less than 90% by weight have an esd less than 2 $\mu$ m and at least 60% by weight have an esd of less than 1 $\mu$ m (column 3, lines 15-16; column 4, lines 5-9, 28-31).

Therefore, it would have been obvious to combine Bown et al. with Lyons et al. and Golley et al. to obtain the invention as claimed in claim 17.

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24. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyons et al. in view of Golley et al. as applied to claim 1 above, and further in view of US Patent No. 5,089,056 to Shi et al.

25. Regarding claim 19, Lyons et al. disclose a pigment composition for coating formulation for coating paper products with the properties as described in detail above. Golley et al. disclose a coating composition for preparing gloss coated paper, especially lightweight and ultra-lightweight coated paper with the properties as described in detail above.

Lyons et al. and Golley et al. do not disclose the use of a water-soluble bleaching (or leaching) agent in further treatment of the kaolin clay suspension.

Shi et al. teach that opacifying pigments made from kaolin products, which are used as paper coating and filler materials, are leached with iron reducing agents such as sodium hydrosulfite to remove discoloring constituents (column 1, lines 7-9, 55-59; column 2, lines 1-10).

At the time of the invention, it would have been obvious to modify Lyons et al. in view of Golley et al. to indicate the leaching process motivated by the fact that using bleaching agents improves the TAPPI opacity of the coating pigment while preserving other coating characteristics such as brightness and gloss (column 2, lines 5-7).

Therefore, it would have been obvious to combine Shi et al. with Golley et al. and Lyons et al. to obtain the invention as claimed in claim 19.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pegah Parvini whose telephone number is 571-272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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PP

  
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SUPERVISORY PATENT EXAMINER